Draft For Review

LIBBY ASBESTOS PROJECT
COMPREHENSIVE RESIDENTIAL REMOVAL ACTION PLAN

INTRODUCTION

1.1 Inter-Agency Agreement

Through an Inter-Agency Agreement (IAG), the United States Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center (Volpe Center) is providing environmental engineering and removal support to the United States Environmental Protection Agency, Region VIII (EPA). This support will include activities such as preparing remedial action plans and designs, conducting removal and remedial actions, oversight support and preparing technical studies and reports. Currently, the Volpe Center is providing support to Libby Amphibole (LA) interior removal in the forms of vermiculite attic insulation removal and LA contaminated dust removal, and as exterior soil removal actions at residential and other properties located in Libby, Montana (herein referred to as the Libby Project). The LA contamination at these properties is a result of historic vermiculite mining in Libby, Montana. The vermiculite mined in Libby has been determined to contain a specific type of asbestos referred to as LA.

Document Purpose

The purpose of this Work Plan is to describe the technical requirements of the Libby Asbestos Project, define roles and responsibilities of all Libby Asbestos Project resources (i.e., EPA, Volpe Center), and to serve as a guidance document for the Libby Asbestos Project as it proceeds.

Removal actions for the Libby Asbestos Project are scheduled to begin in June 2002 (see Section 6.0). Before any removal activities begin, the site specific Work Plans and drawings must be agreed upon by EPA and the resident with an approval signature by both parties. Items to be removed as well as comparable replacement items must be properly documented. As necessary, this Work Plan will be modified to reflect EPA requirements and changes in the scope of the project.

Libby Asbestos Project Removal Actions – Background

The residential sites are located in and near the town of Libby, in Lincoln County, Montana (Attachment 1, Figure 1). Libby, Montana is the site of the former largest vermiculite mine in the world, which had been operational for 70 years. In the 1920s the Zonolite Company formed and began mining vermiculite. In 1963, W.R. Grace bought the Zonolite mining operations. The mine closed in 1990. While in operation, the vermiculite mine in Libby may have produced 80% of the world's supply of vermiculite. Vermiculite has been used in building insulation and as a soil conditioner. It has been determined that the vermiculite from the Libby mine was contaminated with a toxic form of naturally occurring asbestos called tremolite-actinolite asbestiform mineral fibers.

In response to local concern and news articles about asbestos-contaminated vermiculite, the EPA sent an Emergency Response Team to Libby, Montana in late November 1999. In December

1999 the EPA team collected nearly 700 samples (air, soil, dust, insulation). In January, the agency released the indoor air sample results — first to property owners and then to the media and general public. The EPA is taking the current cleanup action under Emergency Response as a removal action, allowing the agency to quickly evaluate and clean up contaminated properties. Through additional sampling these removal actions have grown to include various commercial and residential properties.

Libby Asbestos Project Removal Actions – Site Location
The residential removal sites are located in and around Libby. The Town of Libby is located in northwestern Montana approximately 25 miles east of the Idaho border and 40 miles south of the Canadian border. The Town of Libby is situated within the Kootenai River Valley at the base of the Cabinet Mountain Range. (Attachment 1, Figure 2).

2.0 GENERAL TECHNICAL RESPONSIBILTIES

2.1 U.S. DOT/RSPA/Volpe Center

The Volpe Center will provide environmental engineering and remediation services and support to the EPA, for emergency vermiculite attic insulation removal, dust removal, and soil removal actions in Libby, Montana. Volpe Center responsibilities are as follows:

Acquire and review data:

- Assist EPA with the acquisition of a disposal facility
- Review contaminant extent and magnitude in specific areas
- Acquire final engineering design drawings from CDM
- Acquire project background data and regulatory information
- Assist in pre-construction planning meetings with the Volpe Center removal contractor and community
- Available, as requested, for meetings with EPA, homeowners, and the Volpe Center removal contractor for access and scheduling prior to removal activities
- Coordinate with CDM to acquire technical drawings of properties where removal activities will take place
- Prepare Government estimates for task order contracts based upon preremoval activities site walk, Volpe Center A/E contractor drawings, and EPA data on past similar projects
- Develop statement of work and specifications for task order contracts
- Review and approval of the Volpe Center removal contractor's Work Plan and Health and Safety Plan
- Review supplemental soil sampling plan (as necessary) by CDM for properties requiring additional soil sampling to further delineate the contaminated layer

Preparation and administration of contracts – Requirements of contracts may include the following:

- Acquire long-lead equipment
- Perform pre-removal site walks
- Prepare required plans and acquire permits
- Contract with disposal facility

- Contract with security guard contractor
- Mobilization/field office set-up
- Removal Action
- Demobilization
- Project administration and closeout

Oversight of removal activities:
- Setup and maintenance of field office equipment
- Management of daily cost tracking system (RCMS)
- Progress tracking
- Monitoring the Volpe Center removal contractor compliance with approved plans, drawings and specifications
- Security

- Community relations support during construction activities.

- Administrative record support.

2.2 Volpe Center Removal Contractor

Vermiculite attic insulation removal, dust removal, and soil removal at residential properties will be performed based upon the Volpe Center task order, the Volpe Center removal contractor's approved proposal, and all approved plans. In summary, the following activities will be performed:
- Conduct pre-removal activities site walk
- Prepare project documents including a site specific Work Plan and Health and Safety Plan
- Identify and acquire necessary permits
- Setup and maintain field office/staging area
- Conduct pre-removal activities utility detection and construction walk-through
- Excavate asbestos contaminated soils to an estimated depth of 12" at the properties in order or priority as provided by the EPA
- Transport and dispose of excavated soils
- Restore properties to their "near original" condition by backfilling, re-vegetating, and other necessary repairs
- Survey controls for construction activity. There will be approximately 18" of soil removed from each property. Prior to removal, stakes will be set in the ground at a spacing approved by the EPA On-Scene Coordinator (OSC) and the Volpe Center On-Site Engineer. Soil will be removed from around these stakes and replaced back to original grade. The Volpe Center removal contractor will remove soil from around these stakes and replace back to original grade. The Volpe Center removal contractor will utilize a laser level as necessary to insure the original grade of the property is established. As directed by the EPA OSC, survey crews will be hired for individual properties.
- Conduct health and safety monitoring
- Implement and monitor engineering controls for construction impact mitigation (i.e., dust control)
- Coordinate with CDM contractor for soil removal verification sampling and soil disposal sampling (as required)

- Prepare attic for abatement and remove vermiculite attic and wall insulation through use of vacuums and wet wiping where necessary.
- Upon attic and/or wall asbestos removal, air monitoring contractor (PES) will perform a visual inspection and removal contractor will apply encapsulant where necessary.
- Clearance samples will be taken at homes where initial dust action level was high.
- Dispose of asbestos contaminated soil, attic insulation, and contaminated property at the EPA approved landfill (or at approved area until landfill is constructed).
- Perform RCMS daily cost tracking
- Supervise subcontractors

2.3 Volpe Center A/E Contractor (CDM)

Under an agreement with the Volpe Center, CDM is responsible for contracting with a surveyor and preparing the engineering design drawings for the residential removal actions. As soon as the drawings are complete, they will be provided to the Volpe Center. The Volpe Center will use the engineering design drawings as the basis for their contract with the Volpe Center removal contractor. The Volpe Center, through the EPA, will obtain the drawings. In addition, CDM will provide sample specifications, descriptive narratives, property photographs, and videos to the Volpe Center.

Under contract to the Volpe Center, CDM is responsible for pre-removal sampling and sampling during removal activities. In addition, CDM will conduct air quality monitoring throughout the project.

3.0 RESIDENTIAL REMOVALS

3.1 Preservation and Prevention

While excavations and demolitions remove contaminated material from each site, houses, other major structures, and improvements (selected trees, sidewalks, driveways, and other selected items) will remain throughout the removal activities. These items will be noted and marked during the site surveying phase and will correspond exactly with the items identified in the specifications. Construction site barricades/fencing will be erected around items to be left during removal activities to physically isolate them from the work site.

3.2 Site Preparation

In preparation for the commencement of removal actions, the EPA OSC or Volpe Center representative will notify homeowners at least 24 hours before the survey team arrives. The survey team, consisting of the homeowner, the EPA OSC, the Volpe Center On-Site Engineer, CDM, and the Volpe Center removal contractor, will review and gather all necessary information for each property to verify the accuracy of the drawings. CDM will supplement the drawings with descriptive narratives, property photographs and videotapes. Items that will remain, such as roads, driveways, houses, large trees, and aboveground utilities will be agreed upon by the homeowner, the EPA OSC, the Volpe Center and the Volpe Center removal contractor. Items that can be moved will be preserved in secure trailers or given to homeowners for safekeeping. Current physical conditions, measurements, and any existing damage to the items prior to the arrival of heavy equipment will be noted in daily quality control reports, or appropriate survey logs, and photographed/video taped. Records of the survey will be maintained in the Volpe

Center removal contractor's databases in the field office to document each property's condition prior to any construction activities.

If the residence is having interior work done, the Volpe Center removal contractor will document the conditions and contents of the interior of the home in order to be able to restore the home to its pre-removal conditions.

3.3 Site Sampling

CDM will conduct all pre-excavation and confirmation sampling during the removal activities. The Volpe Center will coordinate these activities with CDM and the removal contractor. Pre-excavation sampling will be performed to further characterize a property, if necessary, to facilitate removal activity planning. Sample locations will be located to delineate the vertical and horizontal boundaries of the contamination if not previously done. This may include surface and subsurface samples in areas where previous sampling did not sufficiently characterize an area for purposes of planning a removal activity. A technical memorandum discussing any supplemental soil sampling will be prepared by CDM and approved by the Volpe Center before samples are collected. Results of the pre-excavation sampling will be used to finalize contaminated areas.

Confirmation sampling will be performed simultaneously with the removal activity. Once all soil containing visible vermiculite has been removed, confirmatory samples will be collected to ensure that all contaminated soil has been removed. These samples will be collected by CDM personnel while providing oversight. Professional judgment will be used to determine the exact location of confirmation samples but will follow the following guidelines to maintain consistency. In general, a confirmation sample will consist of a five-point composite (five subsamples submitted as one sample) sample covering an area where contaminated soil has been removed. A five-point composite sample will not cover more than approximately 250 square feet (ft^2). If an area is greater than 250 ft^2, an additional five-point sample will be collected. In some cases, a single grab sample will suffice as a confirmation sample. It will be at the discretion of the CDM personnel to decide how many samples will characterize a site.

Confirmation samples will advance to 4 inches below ground surface and will be collected in accordance with the Phase 1 Sampling and Analysis Plan for the Libby Asbestos Project (January 2000). Samples will be submitted for analysis to the onsite EMSL laboratory for LA asbestos by polarized light microscopy (PLM) with quick (i.e., 6 hour) turnaround time.

3.4 Property, Resources, and Quality of Life Protections

All structures not scheduled to be demolished will be protected during the removal phase. Safe work practices will be employed by experienced personnel to prevent mishaps to remaining structures or other items. Daily tailgate meetings will be held prior to removal activities. The Volpe Center removal contractor will review the work plan for the day's work and applicable safety requirements.

Land areas and/or structures will be reconstructed to Volpe Center specifications. All Volpe Center removal contractor construction activities will be confined to the appropriate area (see Section 3.8.1).

In some cases domestic animals are housed on the properties requiring removal activities. The Volpe Center removal contractor shall arrange safe, temporary shelter for the animals.

Trees and shrubs will be removed with written authorization from the homeowner as indicated in the Volpe Center's contract documents. No ropes or cables will be anchored to any existing trees. If it is suspected that trees might be defaced, bruised, injured, or otherwise damaged by any equipment or operations, direction will be given to the Volpe Center removal contractor to provide temporary protection of such trees by placing boards, planks, or poles around them.

Non-indigenous material will not be allowed to enter and pollute any surface water or groundwater in the project area. Vehicles and equipment will be lubricated or fueled in a bermed support area. All Volpe Center removal contractor personnel and subcontractors will comply with applicable federal, state, and local laws concerning pollution of surface and groundwater. Special measures will be taken to prevent chemicals, fuels, oils, greases, and bituminous materials from entering public waters. Water used in personnel and equipment washing will not be allowed to re-enter any stream, lake, or wetland. Decontamination water will be stored in tanks on-site and analyzed prior to disposal.

In order to integrate construction activities into the daily activities of residents without any adverse or detrimental affects to daily life, consideration will be given to traffic control and other logistic methodologies. Such considerations include:

- Limiting heavy equipment movements to one route without detours,
- Limiting contractor traffic to off-peak periods as much as possible, and
- Bringing only those pieces of equipment to a site that will be used within a short period of time from arrival.

3.5 Site Surveying

EPA has characterized the soil at the properties for tremolite asbestos. The Volpe Center and CDM are in the process of preparing comprehensive removal designs for each property. Upon completion of the removal designs, each property will undergo a pre-mobilization survey to map the property and catalog property items. The survey will be performed at each site to verify the data provided in the CDM specification drawings, mark and measure items scheduled for removal, examine the structural layout of the property, and determine the existence of any potential hazards. Care will be taken to ensure safe disassembly of structures and handling of debris.

The pre-mobilization survey team will include the EPA OSC or their representative, and the Volpe Center removal contractor. The team will verify that the drawings reflect the particulars of each property. First, all structures that will remain on the property will be identified and tagged. Any discrepancies noted in location, size, dimension, depth, clearances, type, etc. will be submitted in writing to the Volpe Center On-Site Engineer and EPA OSC. The Volpe Center removal contractor shall protect any structures, concrete, asphalt, plants, or other items not required to be removed. Barricades, walkways, lighting, and postings will be provided for protection of the public. The survey team will assess the clearance of trees, shrubs, sprinkler

systems, brick pad, wood deck and any other landscaping items that will require restoration following soil removal. In surveying each property site, a photographic record will also be maintained to document replacement of vegetation, debris and structures.

To avoid confusion and streamline clearing and demolition activities, the surveyors will mark items with surveyor's tape or biodegradable, lead-free paint according to the instructions in the specification drawings. The following colors will refer to a specific direction:

Table 2 – Survey Markings

COLOR MARKER	DEMOLITION RESPONSE
Red	Remove and do not replace
Yellow	Remove and replace with same type or better quality materials
Blue	Refer to specifications for particular directions
Green	Green tape, paint, or fencing will signify that the object will not be disturbed

The survey will include a delineation of other site necessities, specifically:

- Safe access and movement within work areas, walkways, and other passage ways;
- Illumination (as required);
- Vehicle turn space and muddy/wet areas around excavation site; and,
- Location and identification of utilities and high-voltage lines.

The Volpe Center removal contractor will notify local utility companies prior to any site demolition to identify, mark, and temporarily shut-off any utility lines within the excavation areas. The Volpe Center removal contractor will perform lockout/tagout procedures as necessary. The location of underground utilities or installations will be verified for each yard prior to beginning excavation. These will include sewer lines, telephone, gas and water lines, electrical connections, and irrigations systems. The Volpe Center removal contractor will maintain engineering drawings that indicate location of service lines and the means of their control.

3.6 Demolitions

3.6.1 Trees, Shrubs, and Other Debris

Tree removal will be performed per the contract documents and under the direction of the EPA OSC and the Volpe Center On-Site Engineer. A notch and backcut will be used in felling trees over five (5) inches in diameter. The Volpe Center removal contractor will be aware of the following before and during any approved tree removal:

- Removal of items which may interfere with felling;
- Wind force and direction;

- Location of other people; and
- Situation of electrical lines and hazards.

Stumps, roots, embedded cobbles, boulders, and other debris (e.g., water heaters, automobiles, and bathtubs) will be cleared prior to excavation and added to the waste repository in a separate stockpile from the contaminated soil. This procedure will avoid any interference with the final placement of the soil into a permanent location, and allows the EPA OSC to examine the non-soil additions to determine whether they will be stipulated as hazardous or non-hazardous substances.

3.6.2 Structures Removal

Structures will be removed per the contract documents and as authorized by the individual homeowner. Structures (such as sheds, patios, fencing, etc.) will be disassembled, cut, uprooted, and otherwise removed by hand. The piping, fencing, and general structural debris will be transported to the disposal site with the rest of the contaminated waste.

- Pavement: Bituminous pavement, asphalt, and/or concrete to be removed will be demolished using a sawzall, walk behind concrete saw, or cutoff saw (as required). These items will be considered contaminated.
- Piping: Piping found underground, such as sprinklers, storm drains, water lines or sewer/septic lines will be cut with hacksaws or appropriately-sized electric or gasoline powered saws. Any sewer piping or miscellaneous debris to be removed will be placed in a designated area of the waste repository, approved by the EPA OSC. The Volpe Center removal contractor will excavate the piping and debris using an appropriate size hydraulic excavator.

The Volpe Center removal contractor will be responsible for insuring that hazardous and non-hazardous materials are segregated for disposal.

3.7 Contaminated Soil Removal

Excavations will begin when each site is accepted as cleared by the EPA OSC, the Volpe Center, and the Volpe Center removal contractor's Project Manager and will be performed as indicated in the contract documents and property specific Work Plans. Care will be taken to minimize the impact of the excavation on the homeowners.

Whenever possible, temporary access to properties will be maintained during removal activities. Economic and time considerations for the property residents will be implemented when scheduling work. Total quality assurance and quality control will be exercised during the course of the project. The EPA OSC, the Volpe Center and the Volpe Center removal contractor will evaluate the property specific Work Plans proposed plans before starting the removal work.

3.8 Removal Area Management

3.8.1 Introduction

Each property will be physically arranged to facilitate the removal objectives. The property will be divided into several work areas for the removal activities; removal, decontamination, and site

support. The Volpe Center removal contractor will control the movement of personnel and equipment between the areas. These controls will keep the contaminants within specified areas, reducing the potential for contaminant migration. The Volpe Center removal contractor will establish, maintain and clearly mark the work areas with appropriate signage and barricades.

3.8.2 Dust Control

During the movement of the contaminated material dust control measures will be maintained. The Volpe Center removal contractor will use water tankers with power spray units for dust control and a spray wash sprinkler for dust abatement when loading the soil. The dust control concentration will be controlled to within permissible exposure limits, as regulated by OSHA (Occupational Safety and Health Administration). Perimeter air monitoring will be conducted to ensure regulatory limits are not exceeded. The dust abatement systems will be tested periodically to ensure their effectiveness. This will reduce cross-contamination and potential human exposure at the site.

3.8.3 Control of Surface Water

Storm water will be controlled and diverted around the contaminated areas within the exclusion zones into the existing drainage systems. The Volpe Center removal contractor will utilize mobile pump trucks to remove water collected at the waste storage piles, removal zones, or contaminated restoration work areas. This water will be placed into storage tanks and characterized for disposal. The Volpe Center removal contractor will submit the water quality test results to the EPA OSC and the Volpe Center On-Site Engineer for approval to utilize the water for dust control, equipment decontamination, or street cleaning activities.

The Volpe Center removal contractor will work with all regulatory parties to assure that any water requiring treatment is processed until action levels for water quality are met.

Responsibility for the care of surface liquid will be borne by the Volpe Center removal contractor until completion of work under this contract. The Volpe Center removal contractor will provide the materials and the equipment to perform all work necessary to facilitate the control of the surface liquid and to protect the removal work from damage by water. Using temporary control measures, the Volpe Center removal contractor will be responsible for preventing surface water from running into the contaminated area of the exclusion zones and contaminated liquid from running off-site.

Storm water and surface runoff on a completely excavated but uncovered portion of the property will be diverted to a corner area of the property. Dikes for this purpose will be constructed using on-site material to control surface water runoff from cross-contaminating other properties. If necessary, portable pumps will be used to remove any ponded water prior to covering the excavation.

3.8.4 Excavations

Dust abatement is a fundamental method in eliminating contaminant migration during excavation. All excavations, embankments, stockpiles, haul roads, permanent and temporary access roads, waste staging and storage areas, stabilization materials handling areas, and other work areas may cause a dust hazard to others.

Water sprinkling, chemical surfactant treatment (as approved by the Volpe Center), and plastic will be employed to control dust. Sprinkling will be repeated to keep the disturbed area damp at all times. Water trucks designed for this task or water hoses and sprinklers will be used. Dust control will be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

3.8.5 Transportation

Contaminated material will be excavated and live-loaded into trucks directly at the property. Prior to departing the property, trucks will have tarps secured over the beds and will be decontaminated. Trucks will employ negative air pressure HEPA filter systems. This method will focus on minimizing public contact by establishing public thoroughfare rerouting, a "buffer zone" for contingency and monitoring purposes, and restricted access corridors. Only authorized personnel will operate the mobile equipment. The Volpe Center removal contractor will ensure that all operators are fully trained. All personnel will be OSHA 40-hour trained (Hazardous Waste Operations training as per 29 CFR 1910.120) and comply with all requirements under this standard.

A traffic flow diagram will be presented to the EPA OSC and the Volpe Center On-Site Engineer prior to commencing operations. Haul trucks will be directed according to predetermined routes to staging areas or the mine site. Hauling route and times will be proposed in the Traffic Control Plan and coordinated with the town through the EPA OSC.

3.9 Interior Removals

Interior removals will take place at the residences in order of priority as provided by the EPA. All interior removals will begin when each residence is accepted as cleared by the EPA OSC, the Volpe Center, and the Volpe Center removal contractor's Project Manager, and will be performed as indicated in the contract documents and property specific Work Plans. Before and throughout all interior removals the residents will be required to leave their homes, during which time, they will be relocated as approved by the Volpe Center. The government will be responsible for the cost of the relocation and will provide to the resident(s), the government's daily food allotment for the duration of their relocation. Care will be taken to try and minimize the impact of the removal on the homeowners as much as possible.

Due to the hazardous nature of the work, access to properties will not be allowed until the results of the clearance samples are at an acceptable level. Economic and time considerations for the property residents will be implemented when scheduling work. Total quality assurance and quality control will be exercised during the course of the project. The EPA OSC, the Volpe Center and the Volpe Center removal contractor will evaluate the proposed plans before starting the removal work.

3.9.1 Vermiculite Attic and Wall Insulation

Vermiculite attic and wall insulation removals will take place at the residences in order of priority from the EPA. Prior to attic and wall insulation removals, HVAC and venting systems will be investigated for contaminated material and may be taken out in part or in full if this affects the removal and/or cleaning. The Volpe Center removal contractor will conduct attic and walls asbestos abatement as follows:

ATTIC:

- Floorboards and lights will be placed throughout the attic.
- All personnel will be required to wear level C Personal Protective Equipment (PPE) during set-up and cleaning procedures.
- Criticals will be sealed with 2-layers of 6-mil fire retardant poly.
- Attic walls will be covered with 2-layers of 6-mil fire retardant poly. Vacuum hoses and negative air machines will be installed into the space.
- A portable shower equipped with a 2-stage decontamination unit will be placed at the entrance of the containment for personnel decontamination.
- The Volpe Center removal contractor will remove all vermiculite attic insulation from the designated home using a vacuum (VAC) truck in conjunction with wet wiping where necessary.
- Encapsulant will be applied.
- Clearance samples will be taken. Once passed, engineering controls are removed and the attic is ready for re-insulation.

WALLS *(Procedures in addition to above attic procedures if attic and wall vermiculite is present)*

- A corridor will be set-up around the perimeter of the house. Plants, shrubs, trees etc., will be removed to provide access to the walls.
- A containment will be set-up around the perimeter of the house using fence panels and 2-layers of 6-mil fire retardant poly.
- Criticals will be sealed with 2-layers of 6-mil fire retardant poly. Vacuum hoses and negative air machines will be installed into the space.
- A portable shower equipped with a 2-stage decontamination unit will be placed at the entrance of the containment for personnel decontamination.
- In most residences, any paneling over plywood will be removed and disposed of as construction debris to gain access to the vermiculite. The plywood will then be removed and treated as contaminated material.
- The Volpe Center removal contractor will remove all vermiculite wall insulation from the designated home using a VAC truck in conjunction with wet wiping where necessary.
- Clearance samples will be taken. Once passed, the engineering controls are removed, and the walls are ready for re-insulation.

3.9.2 Interior Dust Removals

Interior dust removals will take place at the residences in order of priority from the EPA. The Volpe Center removal contractor will remove the dust from the interior of the residence by using a HEPA vacuum and wet wiping all surfaces. Several negative air machines will be placed throughout the house to scrub the air, and a portable shower with a 2-stage decontamination unit will be placed at the entrance of the house. The removal contractor technicians will enter the space in level C PPE and HEPA vacuum the horizontal and vertical surfaces in conjunction with wet-wiping techniques. This effort is intended to last for 2-3 days depending on the size of the home.

3.10 Confirmation Sampling

Following excavation of contaminated materials, confirmatory soil samples will be collected by CDM to determine if the clean-up requirement levels were achieved. Section 3.3 provides the criteria for confirmation soil sampling. The Volpe Center removal contractor will assist in staking the grid layout for the confirmatory sampling.

3.11 Restoration of Properties

3.11.1 Exterior Restorations

Once excavation activities are completed, Volpe Center removal contractor crews will administer property restorations. No restoration will deviate from Government drawings and specifications without written notification from the EPA OSC. As each restoration is completed, a series of inspections will commence, ranging from pre-acceptance inspections to final placement inspections. Appropriate documentation will accompany these inspections.

3.11.1.1 Backfill and Final Grading

The excavation area will be examined for any conditions detrimental to continuing restoration, (i.e., if excavation areas are muddy or frozen). Backfill material will be inspected by the EPA OSC and the Volpe Center On-Site Engineer, and the Volpe Center removal contractor for absence of debris or rocks over six inches and for material that will provide sufficient and stable support. Inspections will also determine whether fill is too wet for immediate installation. All sub-soil and topsoil will be inspected in this way, with comments recorded in daily quality control reports. Stockpiles of soil will be established on site. Soil will be placed, compacted, uniformly graded and sloped to the existing contour of the land. To prevent ponding, soil will be graded to allow runoff to drain away from structures.

3.11.1.2 Soil Layer

Two options are available for the final soil layer, eighteen (18) inches of topsoil or twelve (12) inches of select fill overlain by six (6) inches of topsoil. Prior to selection of one of these options a cost analysis will be conducted and presented to the EPA. Following selection of an option, the final soil layer will be placed according to contract documents. Suitable material will be obtained and confirmed by the Volpe Center removal contractor to conform to specifications. If select fill material is utilized it will be placed with a moisture content that produces a relatively uniform finish, free from irregular surface changes.

Topsoil will be a natural, friable soil representative of native productive soils, and approved by the Volpe Center On-Site Engineer. The topsoil will be free of foreign matter, objects larger than one inch in any dimension, toxic substances, and any material or substance that may be harmful to plant growth. The final grade will be consistent with the original grade using the methodology described in Section 2.2.

3.11.1.3 Re-vegetation

Topsoil will be of a natural, clear, friable material, possessing the same characteristics of the indigenous soil as per the specifications.

Sod or seed will be installed per the specifications. The Volpe Center and the EPA OSC, and the Volpe Center removal contractor will inspect the operations upon completion of final grading to

determine appropriate revegetation operations in accordance with contract specifications. All planting will be timed to avoid destruction of the new biota during extreme seasonal growing conditions. The site will be inspected periodically during and after reseeding to insure adequate vegetative cover is established. The inspection period will be determined prior to revegetation.

3.11.1.4 Concrete and Asphalt

Concrete and asphalt installation will be performed per the contract documents. The Volpe Center and the EPA OSC will approve all forms and reinforcement (if used). Delivery of concrete and asphalt will be scheduled in order to prevent any delays in placing the material after mixing. Concrete will not be placed in a subgrade that is frozen or overly wet.

The Volpe Center removal contractor will provide inspections of all concrete work performed at the site, reviewing:

- Underground and/or embedded items inspected for operability, placement, and location alignment;
- Construction materials are used which meet contract specifications;
- Testing in accordance with the contract specifications. All inspection results will be included in the appropriate daily quality control report.

3.11.1.5 Above Ground Structures

If structures were removed and disposed of during site clearing they will be assembled after the landscaping is completed as specified in the contract documents. At each site where structures are to be built, the Volpe Center removal contractor will review the specifications for the structure, including description, surface finish of the structure. Upon completion, these structures will be inspected for quality of work and durability, with comments recorded in the daily quality control report.

3.11.2 Interior Restoration (As Required)

Interior walls of homes, apartments, mobile homes, and/or commercial spaces may require cleaning after removals take place. Interior cleaning will consist of using a HEPA vacuum and wet wiping down all surfaces. Carpeting will be professionally cleaned if required and may require disposal per the EPA OSC. Any holes in the walls and/or ceilings created to remove insulation will be repaired and returned to their pre-removal condition. The Volpe Center removal contractor will restore the home to its pre-removal conditions, using the previously recorded conditions and contents of the interior of the home.

3.12 Temporary Access

The Volpe Center removal contractor will provide temporary access ways to all residents, homeowners, general public or dwellers during and after work hours (if approved by the Volpe Center) and also securing the site, equipment and materials during the length of the project. However, approval of temporary access to the property may not always be granted for safety and health reasons associated with contamination. Clearance samples must also be conducted prior to anyone besides those approved to enter the site. The Volpe Center removal contractor will also construct temporary access ways during removal activities for gaining access to inaccessible areas of the properties from neighboring properties.

Temporary exits to and from the properties will be provided at all times until the removal and landscaping is complete. The temporary access ways will not disturb any excavated areas. All excavated areas will be barricaded until the clean earth and topsoil have been replaced. All residents will be provided with a detailed daily removal activity schedule. The property owners and dwellers will be notified of the access ways and emergency exits by bright signs, exit signs, caution tape, etc. They will be informed how to contact the Volpe Center removal contractor at all times in cases of emergency. The Volpe Center removal contractor will institute a contingency plan that will allow communications between the property owners, residents or dwellers and the Volpe center removal contractor crews at site to react efficiently in an emergency.

During work hours the Volpe Center removal contractor will maintain an access way for all properties under removal activity. The Volpe Center removal contractor will provide an emergency exit for each property during the removal activities. For example if the crew is working at the North end of a property, an access way will be provided at the farthest end of the property, i.e. the very South end of the property. Temporary pathways will be installed such as temporary access ramps with guardrails on both sides.

Temporary access during off-hours will be maintained at all the properties which are being remediated and which will require an access way after hours. The property sites will be secured using barrier tapes, barriers, caution tapes, and educating the residents of the risks involved with the excavation.

3.13 Air Sampling

Background Samples
Prior to any residential vermiculite-containing insulation removal or remediation work commencing, PES will conduct ambient air sampling both from within the property and outside of the property. These samples will serve as "base line" or background samples prior to any work being started at the residence. Depending upon the scope and extent of the residential remediation, up to four (4) outside ambient samples may be taken at approximately the east, west, north and south sides of the property. Background samples will also be collected within the residence. The number of background samples collected will vary from property to property, depending upon the scope and exact nature or extent of each removal project. It is estimated that no more than five (5) background samples will need to be collected at any residence. All sample locations shall be based on the professional judgment and experience of PES' on-site Project Manager.

Personal Samples
Personal breathing zone (BZ) samples will be collected on 10% of the remediation workers to insure the correct level of respiratory protection and personal protective equipment is being utilized. The actual number of BZ samples will be determined on-site by PES' Project Manger as determined by the level of effort and the nature of the remediation.

Clearance Samples

All clearance samples will be collected at approximately the exact locations as were the "base line" or background samples. Clearance sample results will be compared to the background sample results. However, the EPA shall determine sample clearance criteria levels. All of the above air samples shall be analyzed by PCM, TEM, and ISO as also required by Volpe and the EPA.

4.0 PROGRESS REPORTING

The EPA requires three levels of reporting. The first level of reporting is related to the RCMS Cost Reporting. The reporting is conducted daily using EPA's RCMS v 4.2 software (note: Certified payrolls are provided to the Volpe Center CO on a weekly basis). The EPA has provided the Volpe Center with the software and handbooks for this reporting system and will provide follow-on training to the Volpe Center prior to initiation of field activities. John Gilbert (EPA Cincinnati) will provide the training at the Volpe Center. In order to supplement to the daily RCMS reporting, the EPA requires daily "end of day" reporting/planning using the EPA form in Attachment 2. The final form of progress reporting is a monthly progress report. The monthly progress report will include tasks performed for the month, planned tasks for the next months, issues, cost summary, and schedule summary.

5.0 POINTS OF CONTACT

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6.0 SCHEDULE

Individual schedules will be supplied prior to the start of any removals.

7.0 GOVERNMENT FURNISHED MATERIALS

- Site Specific Work Plans and Drawings